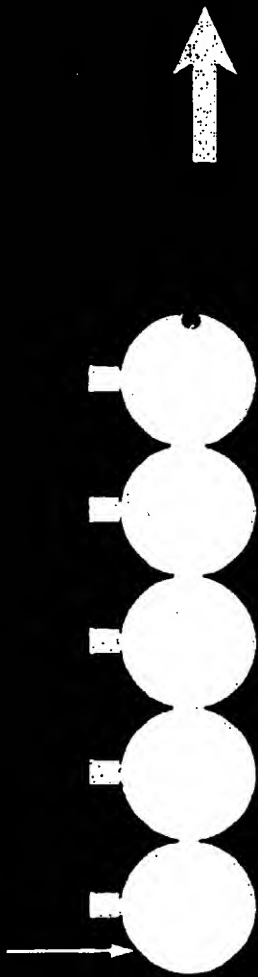


IFT Particle



Kinesin II

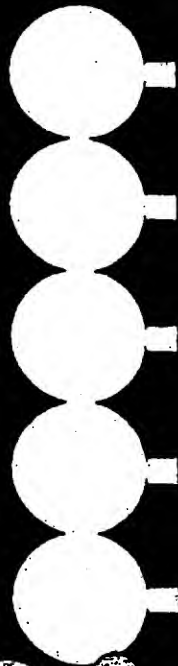
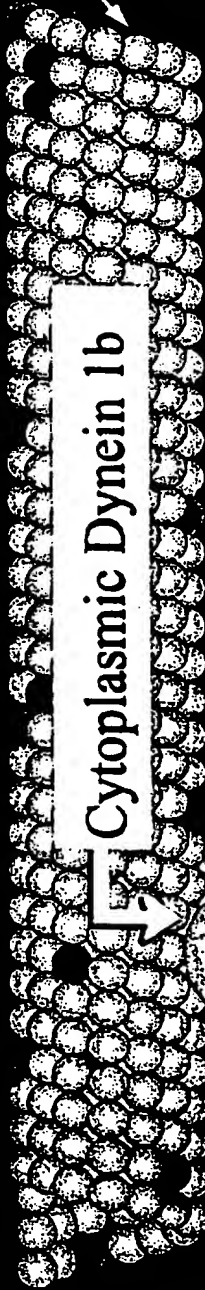


(-)

B-Sub fiber
of outer
doublet
microtubule

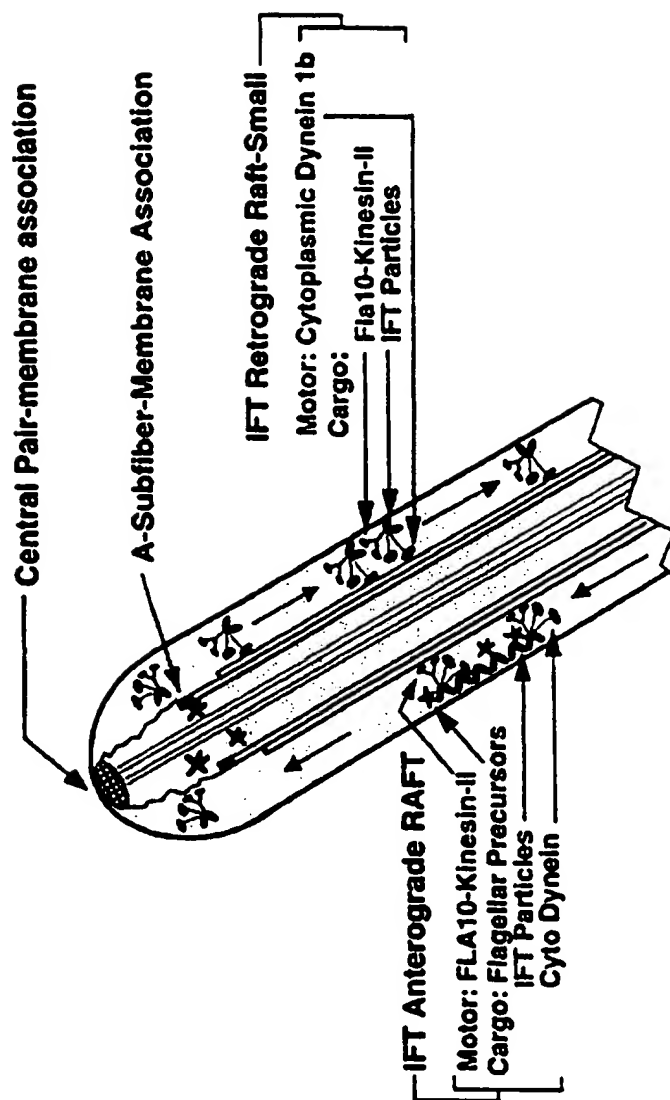
(+)

Cytoplasmic Dynein 1b



Flagellar Membrane
"RAFT"

FIG. 1



Out $\frac{\text{In}}{\text{In}}$
 =Pre-assembled axonemal proteins
 (radial spokes, dynein arms)
 Synthesized on free polysomes

= IFT particle
 =Heterotrimeric Kinesin II
 =Cytoplasmic Dynein 1b

FIG. 2

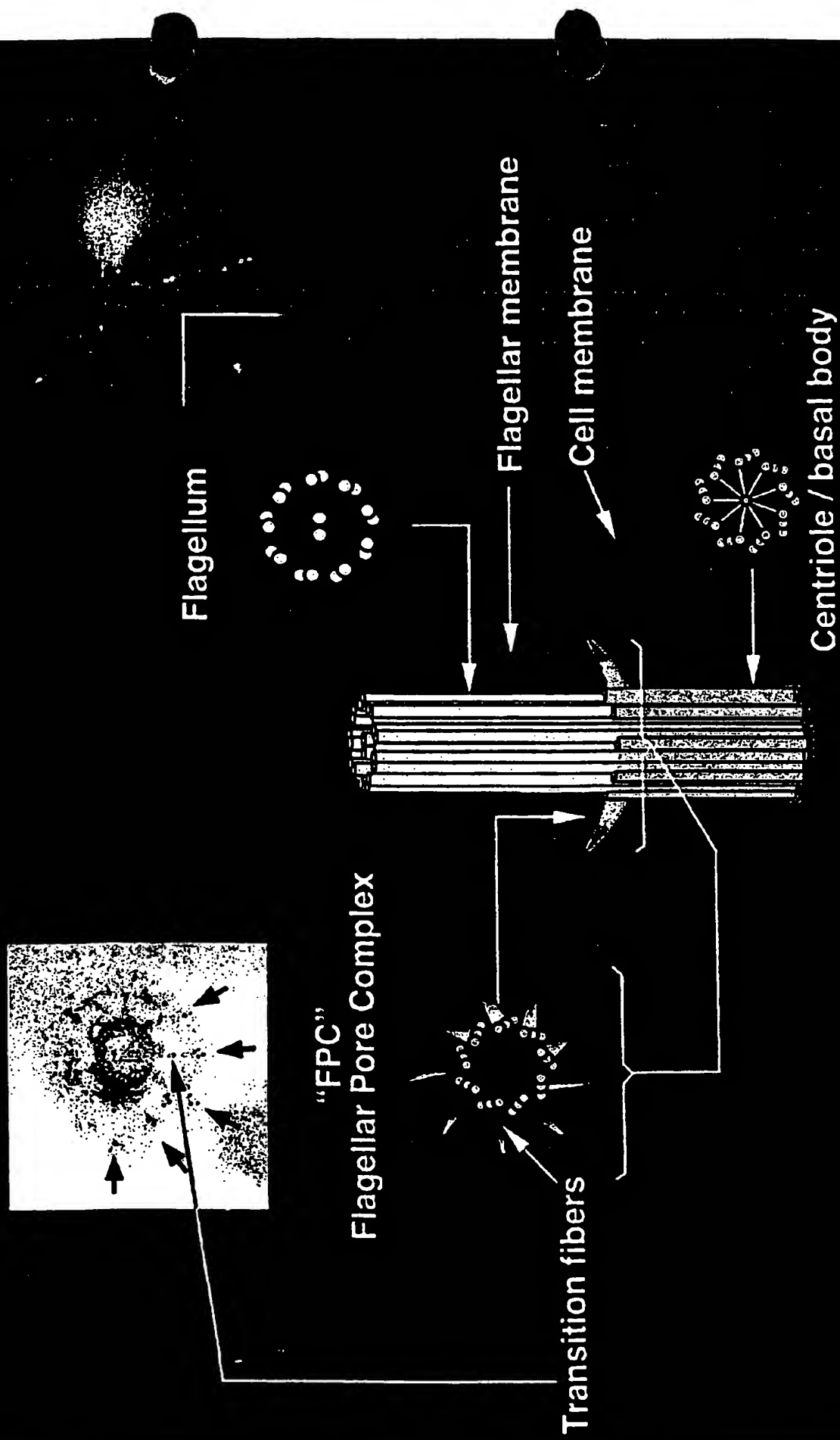


FIG. 3

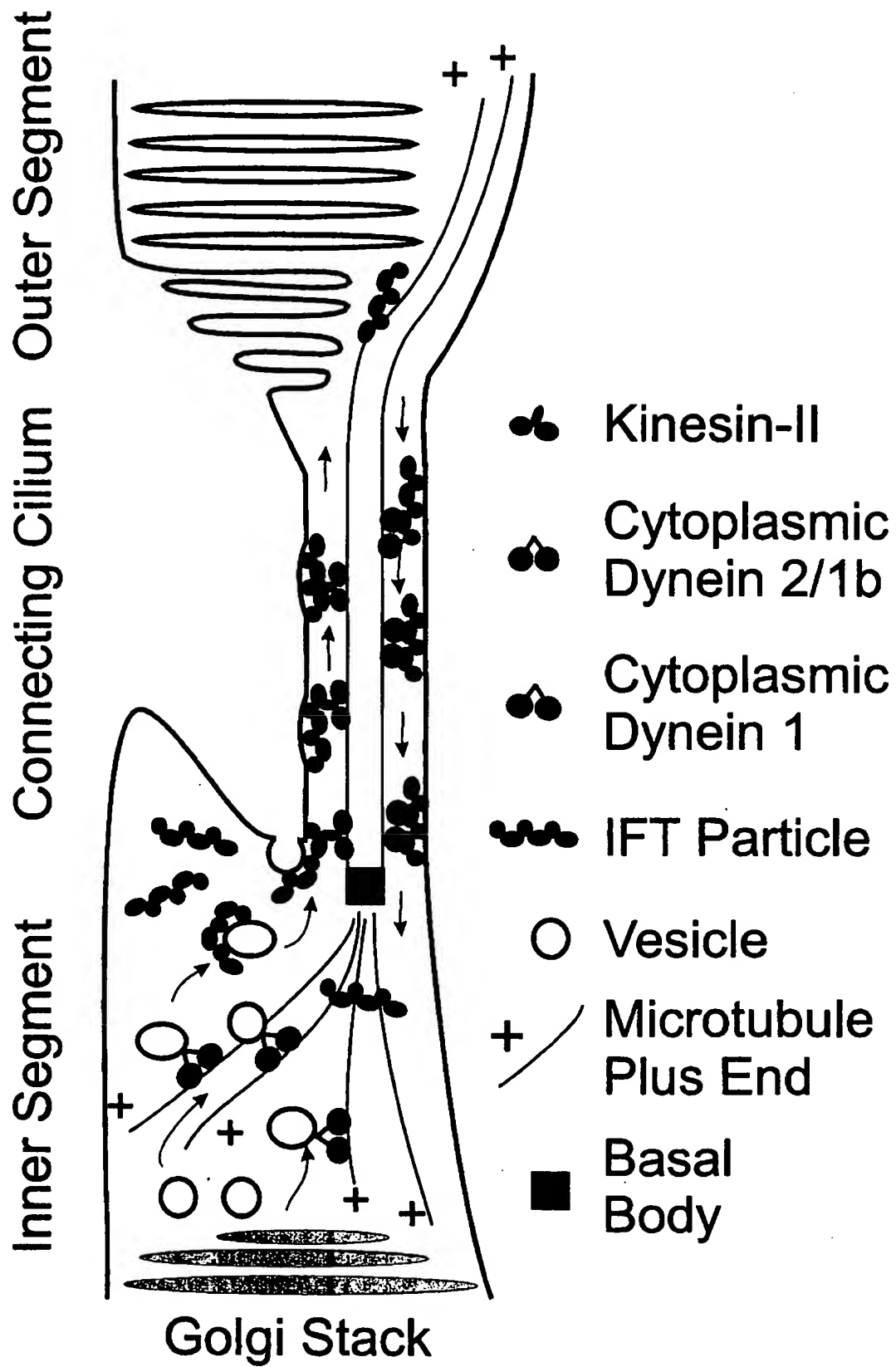


FIG. 5

IFT20

Chlamydomonas

>Cr_IFT20 predicted peptide

MDAVDRGVYFDEDFHVRILDVDKYNASKSLQDNTNVFINNIQNMQGLVDKYVSAIDQQVERLEA
EKLKAIGLRNRVAALSEERKRKQKEQERMLAEKQEELERLQMEEQSLIKVKGEQELMIQKLSDDS
SGAAYV (SEQ ID NO: 2)

FIG. 6A

>Cr_IFT20 cDNA

CACCGCTGCCGCTGAACAGAAAGTCTGCGCAGACTCGTCTTCTTGCCAAGTTCTTGCCAAAAC
CAGCAGGCCTAGAGGTTGCCTTAACCTAAATATACAAAACACAGAGCATCATGGACGCGGTA
GATAGAGGAGTCTACTTTGACGAGGACTTTCATGTCCGCATTCTTGATGTTGACAAGTACAAT
GCTTCAAAGTCGCTCCAGGACAACACAAATGTGTTCATTAACAACATCCAAAATATGCAAGGC
CTCGTGACAAAGTACGTGTCCGCCATCGACCAGCAGGTCGAGCGGCTAGAAGCTGAAAAGCT
GAAGGCCATTGGCCTGCGGAACCGGGTGGCTGCGCTGAGCGAGGAGCGGAAACGTAAACAA
AAGGAGCAGGAGCGCATGCTAGCGGAGAAGCAGGAGGAGCTTGAGAGGCTCCAAATGGAGG
AGCAGTCGCTGATCAAGGTGAAGGGCGAGCAGGAGCTCATGATTCAGAAGCTGTGCGACAGC
AGCAGCGGGGCGGCATACGTGTAAACGGTGTTCGGACGTCATGCGTGCAAAGGTAGTTTGCT
CTGTGAGGGTTGGCTGAGGCGGCGGAGGCTGCTATTGAGGCTGCAGCATGCGGTCTGGTGGC
AGATGTACATAACGGTATGGGGTGTGCGGACAGAACGAAACGGCGAGGGTGCGCAAATGTC
GTGCAGAAGCGACGCTACAGCATCCATGGTACGTAGAGGCTTACTGGGTGTGAGTGCCTCGTC
CGCCACTGGGGACACACTTGCAGCGAGGAGCGCCATTGTTTGGCCACGGATTGCGTCAAGG
ACTTGAACGGCGCCAGTGAAGGCGGGGAATGGAATGTAAACAAACGACTCGAAAAAAAAA
AAAAAAAAA (SEQ ID NO: 1)

FIG. 6B

Human

>Hs_IFT20-1 chr17 gb|AC002094.1|AC002094 [expressed]

MAKDILGEAGLHFDELNKLRLVDPEVTQQTIELKEECKDFVDKIGQFQKIVGGGLIELVDQ
LAKEAENEKMKAIKARNLLKSIKQREAAQQQLQALIAEKKMQLERYRVEYEALCKVEAE
QNEFIDQFIFQK (SEQ ID NO: 23)

FIG. 6C

> Hs_IFT20-2 EST gb|AA584846.1|AA584846

QDSLGEAGLCFDELSKVRDPEVT*QTRDPKEDCMDVFGKISPFQKEIVGGGLIEPVDQLAKAAENEK
RKVVGAWNLLQFMAKHREAQQQQLLAQTAEKMWLKRWWIEYE (SEQ ID NO: 24)

FIG. 6D

>Hs_IFT20-3 chr14 emb|AL121808.2|CNS01DSJ Human chromosome 14

MVKDILAEGLHFDELNKLWVLDSEVTQQTTELKEECKNFADKTGQFQKTVGGGLIELVDK
LAKKA*NAKMRAMVLR (SEQ ID NO: 25)

FIG. 6E

IFT27

Chlamydomonas

>Cr_IFT27 predicted peptide

MVKKEVKPIDITATLRCKVAVVGEATVGKSALISMFTSKGSKFLKDYAMTSG
VEVVVAPVTIPDTTVSVELFLDLAGSDLYKEQISQYWNGVYYAILVFDVSSMESFESCK
AWFELLKSARPDREPLRAVLVANKTDLPPQRHQVRLDMAQDWATTNTLDFFDVSANPPG
KDADAPFLSIATTFYRNYEDKVAADFQDACRNY (SEQ ID NO: 4)

FIG. 7A

>Cr_IFT27 cDNA sequence

ATGGTGAAGAAAGAAGTGAAGCCCATCGATATCACCGCAACGCTAAGATGCAAAGTAGCAGT
AGTCGGCGAAGCGACTGTCGGCAAGAGCGCGCTCATCTCTATGTTACGAGTAAAGGCAGCA
AGTTTCTAAAGGACTATGCGATGACGAGTGGGGTGGAGGTGGTGGTAGCCCCGGTGACCATT
CCGGACACGACGGTCTCGGTGGAGCTCTTTCTGCTGGACACGGCGGGGAGCGACCTGTACAA
GGAGCAGATATCGCAGTACTGGAACGGCGTATACTACGCCATTCTCGTGTTGATGTGAGCTC
TATGGAGTCCTTCGAGTCGTGCAAGGCGTGGTTTGAGCTGCTCAAATCGGCGCGTCCCGACCG
CGAGCGGCCGCTGCGCGCCGTGCTGGTGGCGAACAAGACGGACCTTCCGCCGCAGCGGCACC
AGGTGCGGCTGGACATGGCGCAGGACTGGGCCACCACCAACACCCCTCGACTTCTTCGACGTGT
CCGCGAACCCGCCCGGCAAGGACGCGGATGCGCCGTTCTGTCCATCGCCACCACCTTCTACC
GCAACTACGAGGACAAGGTGGCGGCCTTCCAGGACGCTTGCCGCAACTACTGA

(SEQ ID NO: 3)

FIG. 7B

Human

>Hs_IFT27 gi|12653581|gb|AAH00566.1|AAH00566 putative GTP-binding protein

MVKLAAKCILAGDPAVGKTALAQIFRSDGAHFQKSYTLTTGMDLVVKTVVPDVGDSVELFIFDS
AGKELFSEMLDKLWESPNVLCLVYDVTNEESFNNSKWLEKARSQAPGISLPGVLVGNKTDLAG
RRAVDSAEARAWALGQGLECFETSVKEMENFEAPFHCLAKQFHQLYREKVEVFRALA

(SEQ ID NO: 26)

FIG. 7C

IFT46

Chlamydomonas

>Cr_IFT46 predicted peptide sequence

MDDSM DY PDRD GDDLDQ FQGTARSQV VQNQPHDEEVNLSESESFAGADE
PPAAPRDASLIESHDMDEGPAAPARTLSPTGYEAGKHAPGGIANSDEAPPGAYNAQEYKH
LNVGEDVRELFSYIGRYKPQTVELDTRIKPFIPDYIPAVGGIDEFIKVPRPDTKPDYLGL
KVLDEPAAKQSDPTVLTQLRQLSKEAPGAKADMVGRLEHTDENKAKKIQQWIASINDIH
KAKPAATVNYSKRMPEIEALMQEWPPEVETFLKTMHMPSGDVELDIKTYARLVCTLLDIP
VYDDPVESLHVLFTLYLEFKNNPIFRQHMENKLDGMSGGGGGMMGGGADVGL

(SEQ ID NO: 6)

FIG. 8A

>Cr_IFT46 cDNA sequence

ATGGATGACTCTATGGACTACCCTGACCGCGACGGGGACGACCTGGACCAGTTCCAGGGCAC
CGCGCGCTCGCAGGTCGTGCAGAACCCAGCCGACGACGAGGAGGTGAACCTGAGTGAGTCGG
AGAGCTTCGCGGGAGCGGATGAGCCTCCAGCTGCGCCTAGAGATGCGTCGCTCATAGAGTCA
CACGACATGGACGAGGGGCCAGCTGCTCCAGCGCGGACACTCTCACCAACGGGCTATGAGGC
TGGAAGACACGCACCTGGCGGCATCGCCAACTCGGACGAGGCACCGCCGGGTGCTTACAACG
CACAGGAGTACAAGCACCTGAACGTGGGCGAGGACGTGCGCGAGCTGTTCTCCTACATCGGC
CGCTACAAGCCGCAGACGGTGGAGCTGGACACGCGCATCAAGCCCTTCATCCCTGACTACATC
CCCGCGGTGGGCGGCATCGACGAGTTCATCAAGGTGCCGCGACCCGACACCAAGCCCGACTA
CCTGGGGCTCAAGGTTCTGGACGAGCCGGCCGCAAGCAGTCGGACCCACGGTGCTGACGC
TGCAGCTGCGGCAGCTGTCCAAGGAGGCGCCGGGCGCCAAGGCCGACATGGTGGGGCGGCTG
GAGCACACCGACGAGAACAAGGCCAAGAAGATCCAGCAGTGGATCGCCTCCATCAACGACAT
CCACAAGGCCAAGCCGGCCGCCACCGTCAACTACAGCAAGCGCATGCCAGAGATCGAGGCGC
TGATGCAGGAGTGGCCCGCGGAGGTGGAGACCTTCCTCAAGACCATGCACATGCCGTCCGCG
GATGTGGAGCTGGACATCAAGACCTACGCCCCGCTGGTGTGCACGCTGCTGGACATTCCCGTG
TACGACGACCCCGTGGAGAGCCTGCACGTGCTGTTCACTGTACCTGGAGTTCAAGAACAAC
CCCATCTTCAGGCAGCACATGGAGATGGAGAACAAGCTGGACGGCATGTGCGGCGGCGGCGG
CGGCATGATGGGCGGCGGCGCGGATGTGCTGGGCTTGTGA

(SEQ ID NO: 5)

FIG. 8B

Human

>Hs_IFT46 gi|8926685|emb|CAB96537.1| hypothetical protein [Homo sapiens]

MADNSSDECEENNKEKKKTSQLTPQRGFSENEDDDDDDSDSETSDSDDDDEEHGAPLEGAY
DPADYEHLPVSAEIKELFQYISRYTPQLIDLHKLKPFIPDFIPAVGDIDAFKVPDPDGKPDNLGLL
VLDEPSTKQSDPTVLSLWLTENSKQHNITQHMVKSLDAEKNPKAIDTWIESISELHRSKPPATV
HYTRPMPDIDTLMQEWSPEFEELLGKVSLEPTAEIDCSLAEYIDMICAILDIPVYKSRIQSLHLLFSLYG
EFKNSQHFKALEGGKAFTPSSNSTSQAGDMETLTFS

(SEQ ID NO: 27)

FIG. 8C

IFT52

Chlamydomonas

>Cr_IFT52 predicted peptide sequence

MEEPGAEEVRILFSTAKGESHTHKAGFKQLFRRLRSTYRPDKVDKDDFTLDTLRSAHILVLGGPKE
KFTAPEVDMLKKFVKNGGSILILMSEGGEKAGTNINYFLEQFGMSVNNDAVVRTTHYKYLHPKE
VLISDGILNRAVITGAGKSLNSNDDDEFVSRGPQAFDGTGLETVFPFGATLSVQKPAVPVLSSGKI
AYPMNRPVGAVWAQPGYGRIAVLGSCAMFDDKWLDKEENSKIMDFFFKFLEPHSKIQLNDIDAE
PDVSDLKLLPDTASLADKLGCLQEIDDVPRDWTSLFDDSLFKFDTGLIPEAVSLYEKLGVKKGQL
NLIPPSFETPLPPLQPAVFPPTIREPPPALELFDLDESFASETNRLASLTNKCHGEEDLEYIMEAGH
ILGLKLQENANAKHVLSEVFRRIAQYKMGSGLGQTLDSMGQTLPAANQFGDQFEL

(SEQ ID NO: 8)

FIG. 9A

FIG. 9A

>*Chlamydomonas* cDNA sequence

CTAATGGCATGCAGTAAGGCACTGGTATAGAAACCGTTCCCACCGCCGCGCCAGCCCCGCGT
CCTGTGAGCTGAGAGCTACTTAACAGCCATGGAGGAGCCGGGCGCGGAGGAGGTTTCGGATT
TCTTCAGCACAGCGAAGGGGGAATCCCATACGCACAAGGCAGGCTTCAAGCAGCTATTTTCA
CGATTGCGTTCAACTTATCGTCCAGACAAAGTAGATAAGGATGACTTCACGCTGGACACGCTG
CGGTCAGCGCACATCCTTGTGCTCGGTGGCCCGAAGGAGAAAGTTCACCGCGCCTGAGGTGGA
CATGCTCAAAAAGTTTCGTGAAGAATGGTGGCTCCATCCTCATTCTAATGTTCGGAGGGCGGCGA
GGAGAAGGCGGGCACTAACATCACTACTTCCTCGAGCAGTTTGGCATGTTCGGTGAACAACG
ACGCCGTGGTCCGCACACGCACTACAAGTACCTGCACCCCAAGGAGGTGCTCATCTCGGACG
GCATCCTCAACCGGGCGGTGATCACGGGCGCGGGGAAGTCGCTGAACAGCAACGACGACGAC
GAGTTCCGCGTGTTCGCGGGGGCCGACGGCTTTTGTATGGCACGGGCCTGGAGTACGTCTTCCCC
TTCGGTGCCACGCTCTCAGTGCGAAGCCCGCGGTGCCCGTCTTGTCCAGCGGCAAAATCGCG
TACCCCATGAACCGGCCAGTGGGTGCGGTATGGGCGCAGCCCGGCTACGGCCGCATCGCCGT
GCTGGGCTCGTGCGCCATGTTTGACGACAAGTGGCTGGACAAGGAGGAGAACTCCAAAATCA
TGGACTTCTTCTTCAAGTTCCTCGAGCCGCATTCCAAAATCCAACGACATTGACGCGG
AGGAGCCGGACGTGAGCGACCTGAAGCTGCTGCCCCGACACAGCCAGTCTGGCAGACAAGCTG
AAGGGCTGCCTCCAGGAGATCGACGACGTGCCGCGCGACTGGACCTCGCTGTTTCGACGACTC
GCTGTTCAAGTTCGACACCGGCCTCATCCCTGAGGCCGTGTGCTGTACGAGAAGCTGGGCGT
GAAGAAGGGGCAGCTGAACCTCATCCCGCCCTCCTTCGAGACGCCACTGCCGCCGCTGCAGCC
CGCCGTGTTCCCCGCCACCATCCGTGAGCCGCCGCCGCCGCGCTGGAGCTGTTTCGACCTGGA
TGAGAGCTTTGCCAGCGAGACGAACCGGTGGCCTCGCTCACCAACAAGTGCCACGGCGAGG
AGGACCTGGAGTACTACATCATGGAGGCGGGCCACATCCTGGGCCTCAAGCTGCAGGAGAAC
GCCAACGCCAAGCACGTGCTGTTCGGAGGTGTTCCGCCGCATCGCGCAGTACAAGATGGGCAG
CCTGGGCCTGGGCCAGACGCTGGACTCCATGGGCCAGACCCTGCCCGCGGCCAACAGTTTCG
GCGACCAGTTCGAGCTGTAAGGAGCAGCGAGCTACAGGCCGAGCAACTGCGTGGCAGGCGGC
AGGGCGGGCGCTGGCTGCGGCGGAGGCCGAGGCGGGGGCGGCTGGCCTGGGAATGCTGCTGG
CAGCGGATGTGGAACCGTGGGGCGCCGACGCTGCTGGAGCTGAGGCGGTTTCGGGGCTGGCTG
CTGGCGTGCTGGCAGCAGGATGTGCGCTTGTGCTGATGCGGTCAGCGGAGCAGCGGGCATGC
TGGGCTGCTGAACAGAGCCACGCGGAGGGTGTGCGGCGCGCCAACGGCAGCAGCATGCTGC
ACGCGGGGTTGTGGCCTGGCGGCGAAAAGCTGGGCATTACCCGGTGCCTCCTCTGAAAGGCG
GCTGGGCTTGGCACCGCGTGTGCCGCTTGGCGTGTGCTGGGTGTAAGTGGTTTACGCGTTCTCC
AGTCTGATGAGAGGAGCCTTTATCGGATTGACAATGGTCCATGGTGAACGATGGATTATGGAT
ATCGGAGTGCACAGAGGCTGACAAGATAACGTTACAGTCCAGGAGATATGTGGTGGTAGCTG
CAGCAACTACAAGATGGCGTCAGTCAGACCCGACCTGTTTTGAGTGCTGCAGGCTGACACGCA
TGCTGACAGAACAGACGCCGCTGCAATTGCGGTTGATATTTTAGCCAGAAGGCAATATGTGGG
TGTATGCGGGGGTGGCATGAGGCGCGGAGTGGAGGAGTACAGGGCTGCGTCGGGCGTGCG
CGTCTGCGGTTGCAACAGTGAGCTGTGTTGGGTGTGCAAGGTGGTGGGCGTGTGCATGGAGCC
GTGTGGAGCAGTGTTCCTGTCGCTCAAGCGGCCAGCATTCACTAAGCTCACGTGTAAAC
TCATTGCGGCTGAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

(SEQ ID NO: 7)

FIG. 9B

Human

>Hs_IFT52 gi|4929575|gb|AAD34048.1|AF151811_1 CGI-53 protein [Homo sapiens]
MEKELRSTILFNAYKKEIFTTNNGYKSMQKKLRSNWKIQSLKDEITSEKLNQVGLWITAGPREKFT
AAEFEILKKYLDTGDDVLVMLGEGGESRFDTNINFLLEEGIMVNNDAVVRNVYHKYFHPKEAL
VSSGVNREISRAAGKAVLAIIDEESSGNNALTFVYPFGATLSVMKPAVAVLSTGSVCFLNRPI
LAFYHSKNQGGKLAVLGSCMFSDQYLDKEENSKIMDVVVFQWLTTGDIHLNQIDAEDPEISDY
MMLPYTATLSKRNRECLQESDEIPRDFTTLFDLSIFQLDTSFHSVIEAHEQLNVKHEPLQLIQPQFE
TPLPTLQPAVFPPSFRELPPPPELFDLDETFSSSEKARLAQITNKCTEEDLEFYVRKCGDILGVTSKLP
KDQQDAKHILEHVFFQVVEFKKLNQEHIDTSETAFQNNF (SEQ ID NO: 28)

FIG. 9C

Caenorhabditis elegans

>Ce_Osm-6 gi|2292823|emb|CAA03975.1|osm-6 [Caenorhabditis elegans]
MPPFSDEKMTNRSIGRKVLIDQSKQQQISLISGFRGVARHLKSVLTVEINTEPINLNGLEDVRMLIIP
QPKTSFGTGEIEAIWKVVEEGGSLMILSGEGGERQSLNEMIAKYGITVNKDSVIRTVFLKYFDPKEA
LVANGVINRAIAVAACKNVSTEQKHNSQALSFIYPYGCTLDVNNRMSNVVLSSGSTSFPTSRPVAA
FHETKLNEMKKKGRVCVVGSVSMFHDTYIDKEENGKIFDTFVEFLVNGLELNTIDAAEPEINDYTN
IPDHIHMSQQIKVCMYEGELDQAISDFMKIMDTSLHSFNLKHWPMTIRLYEALNLSPPPLTLVEPQ
FELPMPPFQPAVFPPTFQELPMPPLELFDLDEQFSSPEIQLSQLANRSEEDLIFIEKAGEITGISAEL
TRSERTPKKIIELAVSKLMLFKRSMMDGELEVASAFDIGEHDAHHQSFNQGEEMDEQLFSDIDEFD
DL (SEQ ID NO: 29)

FIG. 9D

IFT57

Chlamydomonas

>Cr_IFT57 predicted peptide sequence

MSSKRGGRSSLAKAPEEAVNGEAFAPESPDPDDGDAGGEDGGAPAPPPPPATKGGPVAVGRS
LEIQTTPDVCMEMLADKLKLLNYEADFCRKKKPYRKPLSRLYFAVPLANSSEQFFYFTSLATWLL
GLAGVELPAPKEFDDPNLTCQNILGAVKKLGFAPPSYHPTKLTVGNGKEVVGVLDGLVDFVLERR
HHKYSRPAYGNDGQPEEGVQLDDEAEAAAMEGADELAMPAQNQADDDEEEGVYVDPGRGDA
AGPGTGASAMDAEKAVLVSKVDPTLWKIELERVAPKLRTIAADSKDWRSHLDEAHQHKEVISK
AWPDSKTSLERLRADLNGTLEKLQTREKFLNEQFESLMQQYRAARTTFTDVQETYNRKTEAVAD
RNQEMHRIGETLEEVKAMMDEKGSNIADATPVARIKTAIKQLNKELHDMEVRIQVVSHTLLQLSL
RNKRLQAQAALSDEEED (SEQ ID NO: 10)

FIG. 10A

>Cr_IFT57 cDNA sequence

GTCTTGGAACCCAGCGAGCCGCGCTCCTTGCCACATGTCCTGCTAGCTTCTGGTTTACACCGT
AGATTCATTTAAGCGAGAGACATGAGCAGCAAGCGGGGTGGGCGGTCATCCTTAGCAAAGGC
GCCCCAAGAGGCGGTAAATGGCGAGGCATTTGCGCCTGAGGCATCTCCCCCTCCACCCGGCG
ACGATGGAGATGCTGGTGGGGAGGACGGTGGCGCGCCTGCGCCCCCTCCGCCCCCGGCTACA
AAGGGCGGTCCAGTAGCTGTAGGAAGGTCGCTGGAGATACAAACAACGCCGGACGTGTGCAT
GGAAATGCTGGCCGACAAGCTGAAGCTGCTAAACTACGAGGCGGATTTCTGCAGGAAGAAGA
AGCCCTACCGGAAACCCCTCTCGCGGCTCTATTTTGCGGTGCCGCTCGCAAACTCGAGCGAGC
AGTTCTTCTACTTTACCAGTCTGGCGACCTGGCTGCTGGGCCTGGCTGGCGTGGAGCTGCCCC
CTCCCAAGGAGTTTGATGACCCGAACCTGACGTGCCAGAACATCCTGGGTGCGGTGAAGAAG
CTGGGCTTTGCGCCGCCAGCTACCACCCTACCAAGCTCACAGTGGGCAACGGCAAGGAGGT
GGTGGGTGTGCTGGACGGGCTGGTGGACTTCGTGCTGGAGCGGCGGCACCACAAGTACAGCC
GGCCGCGTACGGAATGATGGGCAACCGGAGGAGGGCGTGCAACTGGACGATGAGGCGGA
GGCTGCCGCGATGGAGGGTGGGATGAGCTGGCGATGCCAGCCAGAACCAAGCGGATGACG
ATGAGGAGGAGGAGGGCGTATACGTGGACCCGGGCGCGGTGACGCCGCGGGCCAGGGAC
AGGGGCATCCGCGGCGATGGACGCGGAGAAGGCGGTGCTTGTGTCCAAGGTGGACCCACGC
TCTGGAAGATCGAGCTGGAGCGCGTGGCGCCGAAGCTGCGTATCACCATCGCCGCCGACTCG
AAGGACTGGCGCTCACATCTGGATGAGGCGCACCAGCACAAAGGAGGTGATCAGCAAGGCCTG
GCCCCGACAGCAAGACGTCGCTGGAGCGCCTGCGTGCGGACCTGAACGGCACGCTGGAGAAGC
TGCAGACGCGTGAGAAAGTTCCTCAACGAGCAGTTTGAGAGCCTCATGCAGCAGTACCGCGCC
GCCCCGACACGTTACGAGCGTGCAGGAGACATAACAACCGCAAGACGGAGGCGGTGGCGGA
CCGGAACAGGAGATGCACCGCATCGGCGAGACGCTGGAGGAGGTGAAGGCCATGATGGAC
GAGAAGGGCAGCAACATCGCGGACGCCACGCCTGTGGCTCGCATCAAGACCGCCATCAAGCA
GCTTAACAAGGAGCTGCACGACATGGAGGTGCGCATCGGCGTGTTAGCCACACGCTGCTGC
AGCTATCGCTGCGCAACAAGCGATTGCTGCAGGCGCAGGCGGCTCTCAGTGACGAGGAGGAG
GACTAGCTAGATCAGCGAGTGACAGAGGGCATGTGTGCGTACCGTGTGCGCGGTACAGCCG
TGGGATGGAAGAGGTGATGTGGCGGGTTGCGGACCCAGCATTCCGTTAGACCAGATCACTTAT
AGGTACAGAAAGACGGCTATATTGTTGGGGGCGGCGCACCCCTGGCTATGTATATACAAGCCG
TAGCGCAGAGCCGCTGCAAATGCGGTGCTGTGCCTGTGCTCCCGTGGGTGTGCGGCGTTCGGG
TCAAGTTCATATAAGCTGTTGTGACTTGTGAGGCAGGCATGGCATATGGACAGGGCATCCCTG
CAAGGAAAGCAGGCAGCGGTATCCTTGTGGCGATGGGTCAAGCAGTGATGGAGGGGCGAAGC
GAGTTGCGGGCCTGTAAGCACAGGGTTGCCAAAAA (SEQ ID NO: 9)

FIG. 10B

Mouse

>Mm_IFT57 predicted peptide sequence

MAAAAVIPPSGLDDGVSRRAGEGAGEAVVERGPGAAHYHMFVVMEDLVEKLKLLRYEEELLRK
SNLKPPSRHYFALPTNPGEQFYMFCTLAOWLINTGRAFEQPQEYDDPNATISNLSERLRSFGRTAD
FPPSKLKSGYGEQVCYVLDCLAEELKYGFTWKRPSPVEELEETVPEDDAELTLKVDDEEFVE
EETDNEENFIDLNVLKAQTYRLDTNESAKQEDILESTTDAAEWSLEVERVLPQLKVTIRTDNKDW
RIHVDQMHQHKSGIESALKETKGFLDKLHNEISRTLEKIGSREKYINNQLHLVQEYRGAQAQLSE
ARERYQQGNGGVTERTRLLSEVTEELEKVKQEMEEKGSSMTDGTPLVKIKQSLTKLKQETVQMDI
RIGVVEHTLLQSKLKEKCNMTRDMHAAVTPESAIGFY (SEQ ID NO: 12)

FIG. 10C

>MmIFT57 cDNA sequence

GCGAAGGCTGCAGAGATCCTGGCCGGAGCCCAGCCGGGCGCTGGGGG
TCTGAGCAGGGATGGCCGCCGCGCCGCGGTGATCCCGCCGTCGGGCTTGGACGATGGGGTG
TCTCGGGCTCGCGGGGAAGGCGCAGGGGAGGCTGTGGTGGAGCGCGGGCCAGGAGCGGCCTA
CCACATGTTTCGTGGTGATGGAAGACTTAGTGGAGAAGCTGAAGCTGCTCCGCTACGAGGAGG
AGCTACTCCGAAAGAGCAATCTGAAGCCCCCGTCCAGACACTACTTTGCTCTGCCTACCAACC
CAGGCGAGCAGTTCTACATGTTTTGCACTCTTGGCTGGCTGATCAACAAACTGGCCGTG
CCTTTGAGCAGCCTCAAGAATACGACGATCCCAATGCAACTATATCTAATATACTCTCTGAGC
TTCGCTCTTTTGGGAGAACTGCAGATTTTCTCCTTCAAAATTAAGTCTGGTTACGGAGAACA
AGTGTGCTATGTTCTTGATTGCTTAGCTGAAGAAGCTTTAAATATATTGGTTTCACTTGGAAA
AGGCCATCATACCCAGTGGAAGAACTAGAAGAAGAACTGTTCCAGAAGATGATGCCGAGTT
AACATTAAGTAAAGTGGATGAAGAATTTGTGGAAGAGGAGACAGATAATGAAGAAAACCTTA
TTGATCTCAACGTTTTAAAGGCCAGACCTATCGCTTGGACACAAACGAGTCTGCCAAACAAG
AAGATATTTTGAATCTACGACAGATGCTGCGGAATGGAGCCTAGAAGTTGAGCGTGACTAC
CGCAGCTGAAAGTCACGATTAGGACTGACAATAAGGATTGGAGGATCCATGTTGACCAAATG
CACCAGCACAAAAGTGGGATTGAATCTGCTCTGAAGGAGACCAAGGGGTTTTTGGACAAGCT
CCATAATGAAATTAGCAGGACTCTGGAAAAGATTGGCAGCCGAGAAAAGTACATTAACAATC
AACTTGAGCACTTGGTTCAAGAATATCGTGGGGCCCAAGCCCAGCTAAGTGAGGCAAGGGAG
CGCTACCAGCAGGGCAATGGCGGAGTAAGTGAACGGACCAGACTCCTCTCTGAGGTTACAGA
AGAATTAGAAAAGGTAAAGCAAGAAATGGAAGAGAAGGGCAGCAGCATGACGGACGGCACT
CCTTTGGTGAAGATTAAGCAGAGCTTAACCAAGCTGAAGCAAGAACTGTTTCAAGATGGACAT
TAGAATCGGTGTGGTGGAGCACACGCTACTTCAGTCAAACTCAAGGAGAAGTGCAACATGA
CCAGGGACATGCATGCAGCTGTCAACCCAGAGTCAGCAATTGGCTTCTATTAAACACGTGGGC
TTCCATGCTTCTGATTATTCGTTTTTATATCAAAATGATTTTTTAATGTTGCATTGATTTCCAAA
CACAATTTATACTTCTTCAAGCATATTCAGTGGGTATTTTTGCACATGTGTTAATATCATGGTG
ATTATGATGGCCAAAGCCTGTACAATGAATATAGTATTTAATAAAGTACTTAAATTAATAAAAA
AAAAAAAAA (SEQ ID NO: 11)

FIG. 10D

Human

>Hs_IFT57-1 gi|7022022|dbj|BAA91466.1| unnamed protein product [Homo sapiens]
MTAALAVVTTSGLDGVPRSRGEGTGEVVLERGPGAAHYHMFVVMEDLVEKLKLLRYEEEFRLKS
NLKAPSRHYFALPTNPGEQFYMFCTLAAWLINKAGRPFEQPQEYDDPNATISNILSELRSFGRTADF
PPSKLKSGYGEHVVCYVLDCAEEALKYIGFTWKRPIYPVEELEEESVAEDDAELTNKVDEEFVEE
ETDNEENFIDLNVLKAQTYHLDMMNETAKQEDILESTTDAAEWSLEVERVLPQLKVTIRTDNKDWR
IHVDQMHQHRSGIESALKETKGFCLKHNEITRTLEKISSREKYINNQLNLVQEYRAAQAQLSEA
KERYQQGNGGVTERTRLLSEVMEELEKVKQEMEEKGSSMTDGAPLVKIKQSLTKLKQETVEMDI
RIGIVEHTLLQSKLKEKSNMTRNMHATVIPEPATGFY (SEQ ID NO: 30)

FIG. 10E

>Hs_IFT57-2 chromosome 12 [ESTS BF089172]
DQRIHVDQMYQHKSGIESSLKESKRFFDKLHNE
ISKTLKISHCEKYINHQLHRVQEYPAAQTQLSDVRSQQGSGGVIERTRLLSEATED
TEHVKLEMEEEKCSSMTDGDLSLVKIKQSLTKLKQETVQMDIRIGVVEHTLL (SEQ ID NO: 31)

FIG. 10F

Caenorhabditis elegans

>Ce_IFT57 gi|7504754|pir||T22994 hypothetical protein F59C6.9 - Caenorhabditis elegans
MLHHIKSLKSVLSRGQEGRFGEKRHSNTTFITGIATDFTAALKKSGAGENVIFILNSLADASLVHVG
FQWQKMIPPKEEDEDTAVDEQDEDDNDNDIVEEPMNFLDDDDDDNVIEIDLKAQGLATESKNPLQ
SVLQSNTDAITWKQEVERVAPQLKITLKQDAKDWRHLHLEQMNSMHKNVEQKVGNGVGPYLDNMS
KDIKALERIASREKSLNSQLASMMSKFRRATDTRAELEKYKAASVGVSSRTETLDRISDDIEQL
KQQIEEQGAKSSDGAPLVKIKQAVSKLEEELQTMNVQIGVFEQSILNTYLDRHFNFSANLLNIM
(SEQ ID NO: 32)

FIG. 10G

IFT72

Chlamydomonas

>Cr_IFT72 partial predicted peptide sequence (lacking N-terminal end)

VYVIQQEFAALKDRNEQQRKRVDEVLTERLNLESKAKQAESK
MSEIQASMDQRLNSMPPSRNEYTTLVAEQQLQADSKRFEEVLDELDKALQASEGELAR
NPFKQRLQLQEIRALTGKKYELTEERQSKRSPEELRADLMAKIKRDNTEVEQMTQOI
RELQDQIKKMEERVKSLGGATSGAVAAEEKANREKFEELLAKERHLNNFMDGFPSRKA
MQEKQQKEDGIVGVLEKVMKMQGIIGSNLPSQKKYKEMQDELEYKKMQLENTQTTQERLK
EELTMRRTLEKIDTLEDKIKLELTQLAERQEAMEKEMGEFGSVEDIQRKANAAARERMGA
CAVCCCLKRKDLLRSIVAERGLKFQAKRAQLQDHNLQVQLEKMEAKLKNLSAGVFEMDEFI
KAKESETNYRQLASNIAALVDDLNVHVKKAVV (SEQ ID NO: 14)

FIG. 11 A

>Cr_IFT72 partial Cdna sequence (lacking 5' end)

GTGTACGTGATCCAGCAGGAGTTCGCGGCGCTCAAGGACCGCAACGAGCAGCAGCGCAAGCG
CGTGGACGAGGTGCTCACGGAGCGCCTCAACCTCGAGTCCAAGGCCAAGCAGGCCGAGTCCA
AGATGTCTGAGATCCAGGCGTCCATGGACCAGCGCCTCAACTCTATGCCGCCAGCCAGCGCA
ACGAATACACCAGCTCGTGGCCGAGCAGCAGCAGCTGCAGGCCGACAGCAAGCGCTTTGAG
GAGGTGCTGGACGAGCTGGACAAGGCGCTGCAGGCCAGCGAGGGCGAGCTGGCGCGCAACC
CCTTCAAGCAGCGCAGCCTGCAGCTGCAGGAGCAGATCCGCGCGCTCACGGGGAAGAAGTAC
GAGCTGACGGAGGAGGAGCGGCAGAGCAAGCGCTCGCCCGAGGAGCTGCGCGCCGACCTCAT
GGCCAAGATCAAGCGAGACAACACCGAGGTGGAGCAGATGACGCAGCAGATCCGCGAGCTTC
AGGACCAGATCAAGAAGATGGAGGAGCGCGTCAAGAGCCTGGGCGGCGCCACCAGCGGCGC
GGTGGCGGCGGAGGAAAAGGCCAACCGCGAGAAGTTTGAGGAGCTGTTGGCCAAGGAGCGC
CACCTAAACAACCTTTATGGACGGCTTCCCCAGCCGCAAGGCCGCAAGATGCAGGAGAAGCA
GCAGAAGGAGGACGGCATCGTGGGCGTGTGGAGAAGATGGTGAAGATGCAGGGCATCATG
GCTCCAACCTGCCCAGGCCAGAGAAGTACAAGGAAATGCAGGACGAGCTCGAGTACAAGAA
GATGCAGCTGGAGAACACGCAGACCACGCAGGAGCGGCTCAAGGAGGAGCTGACCATGCGG
CGCACAGAGCTGGAGAAGATCGATACGCTGGAGGACAAGATCAAGCTGGAGCTGACGCAGCT
GGCGGAGCGGCAGGAGGCCATGGAGAAGGAGATGGGCGAGTTCGGCAGCGTCGAGGACATC
CAGCGCAAGGCCAACGCCGCACGCGAGCGCATGGGGGCGCTGCGCAGTGTGCTGTTTGAAGCG
CAAGGACCTGCTGCGCTCCATCGTGGCGGAGCGCGGCGCTCAAGTTCCAGGCCAAGCGCGCGC
AGCTGCAGGACCACAACCTCCAGGTGCAGCTGGAGAAGATGGAGGCCAAGCTGAAGAATCTG
AGCGCGGGCGTATTTCGAGATGGACGAGTTCATCAAGGCCAAGGAGAGCGAGACCAACTACCG
CCAGCTGGCCTCCAACATAGCGGCGCTGGTAGACGACCTCAACGTGCATGTCAAGAAGGCCG
TGGTGTAAGAAGGAGGAGTGGTGTAAGGGGTCTCCGGAGGAGGGCGCGTGGCGTTGTTGGG
GTGTTGGGGGCGCGGCGGAGAGTACGTGCGTGTGGCGTTGTGCCTTTCAGCAGGCTGCACG
TGATGACGGTAGTCAAGGTGAAGGGCGGCGCTGGGCACAGGAGGATGCTGACGCCGTGACGG
GTGACGATGACAGGCCATCGCGAGTTTGATCTCTGCTGTGAGTATTGACTTGGGTTCTAG
ACAGGTCGGGCTACAAGCCCGGAGGTTGATGGCTCACCTCGCAGTGCAGCGGACAGCAGGTGT
GGCGCATGCGCATGTGCCTCAGGAGCGCGGTGCGGACCAGGGAAGATGCGATGGGAGTAGGC
TAGGCCTGTGTGAGGGCCCTTGCCGAAGCGCCACGGCCATTCCATGGCCTGGCCGAAGGCA
GCGCTCGTGGTTGGATACTGACCAGCGGCGTCAAGCGGCGTACGATGTCAGAAGTGGAGCTA
CCGCCCCGTCACAAGGGGTGATGTACATACTGTTATTTAGGAGTCCGCTGCTTATAGCTACTG
GACTGCAGAAGAAGGAGGCTGCAAGGATCTGATGGAGGCGCTGGTGTGTATGGATGACGCTG
TAAGAGATGCACAAGAGAAAAA (SEQ ID NO: 13)

FIG. 11B

>Hs_IFT72 gi|13376669|ref|NP_079379.1| hypothetical protein FLJ22621
MEEVMNGYNMLKAQNDRETQSLDVIFTERQAKEKQIRSVEEEIEQEKQATDDIKNMSLENQVKY
LEMKTTNEKLLQELDTLQQQLDSQNMKKESLEAEIAHSQVKQEAVLLHEKLYELESHRDQMIAED
K SIGSPMEEREKLLKQIKDDNQEIASMERQLTDTKEKINQFIEEIRQLDMDLEE HQGEMNQYKEL
KKREEHMDTFIETFEETKNQELKRKAQIEANIVALLEHCSRNNINRIEQISSITNQELKMMQDDL NFK
STE VQKSQSTAQNLTSDIQLQLDLQKMELLESKMTEE QHSLKSKIKQMTTDLEIYN DLPA LKSSG
EEKIKKLHQERMILSTHRNAFKKIMEKQNIYEALKTQLQENETHSQLTNLERK WQHLEQNNFAM
KEFIATKSQESDYQPIKKNVTKQIAEYNKTIVDALHSTSGN (SEQ ID NO: 33)

[illegible]

IFT88

Chlamydomonas

>Cr_IFT88 predicted peptide

MSYGGTEEDDLYGGYDEQSNPLAGSGGAAFKALGADGAPPGTAMMGPPGTAMKSFVPGTA
MRGGTAMQQDPSLARPMTSNRGAGFTSAPNKKFDPLNRSMSGSTLGSSGGGAMLVARKGDT
SPEEQARGMEKTVHELLEKSAADAAKNDINSALENAMEAKKNERKLCRFREQNNMADQIN
LELMYAVDFNLAHMYHMKNYSEALNLYTAIVRNKNFPQSGWLRVNMGNHFEQKKYPSA
IKMYRMALDQISATAKEVRFKIMRNIGLSFVRMGQYPDALQSFATVMDNVPDHQTGYNLV
MCNYALSDREGMKNAFIKLLKVSPSEMDDDDDDDDPMGDDDMQVMTMDDGLKDEMRRNT
IITRLIVKAAQLISEKVDRANGFEGGFMWCCEQLRDAGYTKLANEVELAKATRFMGQKQF
DKAVGVFKDFEKKKEPRVKARAATNLAFLYFLEGETDQADKYSEMALKSDRYNARAYVNKG
CVLVERGDLEGARSLFNEAAGIDPYCVEAIYNLGLVSQRLNELPYALAAFKKLHNMVDPN
VEVIHQIATTYDMMGDFKNAVWKFELLTSLVSNDPGVLARLGAIHARFDDEAKALHYYQE
SHRVYPVNMDVISWLGAYHVKSEVYEKAMPFFDLASKIQPEVKWALMVASCYRRTNNLP
AALGKYKQIHTQHPDNVECLRYLVHLCSELGRRAEAAEYMTKLKKAEKAAPVPEATTAAAP
AAAAAGSGMGGMGGLDDDIGSSAVSAQNRGKKMLVKEHMGGGGGKDNDWDWGNEQLGDDLL
PM (SEQ ID NO: 16)

FIG. 12A

>Cr_IFT88 gi|11528334|gb|AF298884.1|AF298884 Chlamydomonas reinhardtii protein IFT88 (IFT88)
 CGGCAACTTGACACTTGAGCTACTCGAAGGCAGGGCCGTGTGCAGAGCTCCTTCCCCACTATC
 CTTCTTTTGGCTACCATCTTATCTTGCTAACAGCCTATAGAAGATGAGCTACGGGGGCACGG
 AGGAGGATGACCTTTATGGAGGATATGATGAGCAATCGAACCCGCTTGCGGGCTCGGGTGGT
 GCCGCATTTAAGGCACTTGGGGCCGATGGAGCTCCTCCAGGCACCGCCATGATGGGGCCGCCT
 GGCACGGCCATGAAGAGCTTCGTGCCAGGCACGGCTATGCGGGGCGGCACGGCGATGCAGCA
 GGACCCAGCCTGGCGCGGCCTATGACCTCGAACCAGGGGTGCTGGCTTACGTGCGCGCCTAA
 CAAGAAGTTTGACCCCTCAATCGCTCAATGGGGTCGACACTGGGCTCGTCGGGGGGTGGCGC
 AATGCTGGTGGCTCGCAAGGGTGACACCAGCCCGGAGGAGCAGGCGCGCGGGATGGAGAAG
 ACGGTGCATGAGCTGCTTGAGAAGAGCGCGCGGAGCGGCTAAGAATGACATCAACTCGGC
 CCTGGAGAACGCCATGGAGGCGAAGAAGAATGAGCGAAAGCTGTGCCGCTTCCGGGAACAG
 AACAACATGGCGGACCAGATCAACCTGGAGCTGATGTACGCCGTGGACTTCAACCTGGCACA
 CATGTACCACATGAACAAGAACTACAGCGAGGCGCTGAACCTGTACACAGCCATCGTGCGCA
 ACAAGAACTTCCCGCAGTCGGGTTGGCTGCGCGTCAACATGGGCAACATCCACTTCGAGCAG
 AAGAAGTACCCCTCCGCCATCAAGATGTACCGCATGGCGTTGGACCAGATCAGCGCCACCGC
 CAAGGAGGTCCGCTTCAAGATCATGCGCAACATCGGGCTGTCGTTCTGTGCGCATGGGCCAGTA
 CCCCAGCGCTGCAGTCCTTCGCCACGGTCATGGACAACGTGCCCCGACCACCAGACCGGCTA
 CAACCTGGTCATGTGCAACTACGCGCTGAGCGACCGCGAGGGCATGAAGAAGCCTTCATCA
 AGCTGCTCAAGGTGAGCCCATCCAGCGAGATGGATGACGATGACGACGACGACCCCATGGGC
 GATGACGACATGCAAGTGATGACCATGGATGACGGGCTGAAGGACGAGATGCGCAAGCGCA
 ACACCATCATCACGCGCCTCATTTGTCAAGGCCGCGCAGCTCATCTCCGAGAAGGTGGATCGCG
 CCAACGGCTTTGAGGGCGGCTTCATGTGGTGGCTGCGAGCAGCTGCGCGACGCGGGCTACACC
 AAGCTGGCCAACGAGGTGGAGCTGGCCAAGGCGACCCGGTTCATGGGGCAAAGCAGTTTGA
 CAAAGCCGTGGGCGTGTTCAAGGACTTTGAGAAGAAGGAGCCGCGCGTCAAGGCGCGCGCCG
 CCACCAACCTGGCGTTCCTGTACTTCCTGGAGGGCGAGACCGACCAGGCCGACAAGTACAGC
 GAGATGGCGCTCAAGAGCGACCGCTACAACGCACGAGCCTACGTCAACAAGGGATGCGTGCT
 GGTGGAGCGCGCGCATCTGGAGGGAGCGCGAAGCCTGTTCAACGAGGCTGCCGGCATCGACC
 CTTACTGCGTGGAGGCCATCTACAACCTGGGCCTGGTGAGCCAGCGCCTGAACGAGCTGCCGT
 ACGCGCTGGCGGCGTTCAAGAAGCTGCACAACATGGTGCCCGACAACGTGGAGGTCTCCAC
 CAGATCGCCACCACGTACGACATGATGGGCGACTTCAAGAACGCGGTCAAGTGGTTTGAGCT
 GCTCACCTCGCTGGTCAGCAACGACCCCGCGTGTGTCGCGACTGGGAGCCATCCACGCCA
 GGTTTCGACGACGAGGCCAAGGCGCTGCACTACTACCAGGAGTCGCACCGCGTGTACCCGGTG
 AACATGGAGCTCATCTCCTGGCTGGGCGCCTACCATGTCAAATCGGAGGTGACGAGAAGGC
 CATGCCCTTCTTTGACCTGGCCTCCAAGATCCAGCCGAGGAGGTCAAGTGGGCGCTCATGGT
 GGCGTCTGTACTACCGCCGACCAACAACCTGCCCGCCGCGCTGGGCAAGTACAAGCAAATCC
 ACACGCAGCACCCCGACAACGTTGAGTGCCTGCGCTACCTGGTGCACCTGTGCTCCGAGCTGG
 GCCGCCGCGCGGAGGCCGCGGAGTACATGACCAAGCTCAAAAAGGCGGAGAAGGCGGCGGT
 GCCCGAGGCAACGACAGCGGCGGCGCCCGCCGCGGCCGCGAGCTGGCAGTGGCATGGGTGGCA
 TGGGCGGCCTGGACGACGACATTGGCAGCAGCGCGGTGTCGGCGCAGAACCGCGGCAAGAAG
 ATGCTGGTCAAAGAGCACATGGGTGGCGCGGTGGCAAGGACAACGACGACTGGGGAAACG
 AGCAGCTTGGGGACGACCTGCTGCCATGTAAACCGCAGTGCTGCCACAGGGCTTGGCGGGG
 GCGGGGCGTCAGCGCAGCCAGTGGGGTACCGCCGCGGCCTGGCGGAGGTGGCGGCGGCGCA
 GCTGGCGGAGCCATGCGCGCCAGGGCCAGGGGTGTGGGGAGGTGATGGCGAGGGCGAGG
 ACGACGACCACCTAAAAGCGCTGGGGTGGGGGTGGGGTTGGTGGGCGGCCGACGCGGGGGC
 GCGCTGTCTGCCGGCACGGGGCGCGTGAAGGCCGATGTCAGCCGCGCCGCTCTACCCGGA
 GTTCGGGGCCGAGCCTGCGTTTGAAAGGTGCTGAGCTTTGGCTCGGCTGGGACGTCCAGCGC
 ACTGCCTGAGCTGGCGTAAAGCCATTACCGCTGATGCAGCCCGCCATTCTGTGTGTGCGTAT
 ATGTGTGTGAATGTATGTGTGTGCTAGGTAAGCACGAGATGCGTGTGCGTTTGTGGTTTCGCG
 CTGCGCCACTTTTGGCTGCAGGGGTCCCCAGGTCAAGTGTGAAGCCCGGCCCGGGCGGAAATG
 GGTGCATGGCAGTTGCGGCGCATGCATGCGGAAGTGAGCGAAGTGCAATAGGCTCCTGCAGG
 GCATGGATGCGTAGGAACAGGGCTTGAATGATATCACTATGTGGCGTTGACGGGCCCAAC
 TTACATGGGAGAGGCACGCCGAAAGGTGTGTGAGGATCAGGAGCTTGGACTTGCCGTAGTG
 CTGTACATGGTGCCAGTCTACGTGCGGGCATAGACACATACAGGACCTGTGCTGCTGCGGAGT
 CCGCATCTGCAGGAAGTCGTGCCGGGTGTCACGAGTGCGGACGATGCGGATTGTGGAGGAGT
 ACAGATGGGGCCATCGGACATACTGGCACAGTGGCACACCACCGGCCCCCTGCGACGCATGCTC
 GCACGACCCTGTAAAGGTGAGCCCCAAAAA (SEQ ID NO: 15)

FIG. 12B

[illegible]

FIG. 12C

FIG. 12D

IFT122

Chlamydomonas

>Cr_IFT122 partial predicted peptide sequence (lacking N-terminal end)

HEGHFRRAPHFAYAKETLLKMDDTKGLITLYVEAEKWDDAFLLLHAHPECRQDVYLPYAKWLSN
QDRFDEARLAYQEGGFSLATRILEQLCANAVVETRYADAAFYYYQLAMEALKSIKNPPSNMAPS
DRSALERFTELYDRAEVYYAYEVVHKSVHSPFRRTTHPDTLNFASRFLLMRLLPPREVPLGVSVVN
VVYVLAKQAVEAGAFKLARFAYNKLQTLVLPAAWQAEVDLASVVIRSKPFSDEKDLLPVCWRCS
TTNPLLNTQGDYCINCGAPFIRSFVTFEHLPVVEFELEPGVDDEEAGRLLGEDAGMEAARRERKAE
RQAKAAEVGGNMLRLDQNEIDRMDDAFAAQMMVPNTTIRVDRAMLRRLKTAEVMVRTWPNPV
IPKQYFRSHGPGGAAVLQDPADTSSSRMSSRWRRWSVARRPSAAPPCAARAWRRARTPRMRVPA
ATSWAGRWAARVGPLGAPARRACPCPSSRAGRWCERGRLSGAYRVRGWIPDVGGE

(SEQ ID NO: 18)

FIG. 13A

>Cr_IFT122 partial cDNA sequence (lacking 5' end)

GGCACGAGGGCCACTTCCGCCGCGCGCCGCACTTTGCGTACGCCAAGGAGACGCTGCTCAAA
ATGGACGACACCAAGGGCCTGATCACGCTGTACGTGGAGGCTGAGAAGTGGGATGACGCCTT
CCTGCTGCTGCACGCGCACCCCGAGTGCCGGCAGGACGTGTACCTGCCCTACGCCAAGTGGCT
CAGCAACCAGGACCGCTTCGATGAGGCGCGGCTGGCGTACCAGGAGGGCGGCTTTCCAGCC
TGGCCACCCGCATCCTGGAGCAGTTGTGCGCCAACGCGGTGGTAGAGACGCGGTACGCGGAC
GCCGCCTTCTACTACTATCAGCTGGCCATGGAGGCGCTCAAGAGCATCAAGAACCCGCCCTCC
AACATGGCGCCCTCGGACCGCTCCGCGCTGGAGCGCTTCACGGAGCTGTACGACCGCGCCGA
GGTGTAACACGCTACGAAGTGGTGACAAAGTCCGTGCACTCGCCCTTCCGCACCAACGCACCC
CGACACGCTCTTCAACGCCTCGCGCTTCTGCTCATGCGCCTGCTGCCGCCGCGGAGGTGCC
GCTGGGCGTCAAGCGTGGTCAACGTGGTGTACGTGCTGGCCAAGCAGGCTGTGAGGCGGGCG
CCTTCAAGCTGGCGCGCTTCGCGTACAACAAGCTGCAGACGCTGGTGCTGCCGGCGGCCTGGC
AGGCGGAGGTGGACCTGGCATCCGTGGTGTATCCGCTCCAAGCCTTTCTCAGACAAGGAGGAC
CTGCTACCGGTGTGCTGGCGCTGCTCCACCACCAACCCGCTGCTCAACACGCAGGGCGACTAC
TGCATCAACTGCGGCGCGCCCTTCATCCGCTCCTTCGTACCTTCGAGCACCTGCCCGTGGTGG
AGTTTGAGCTGGAGCCGGGCGTGGACGACGAGGAGGCGGGCCGCTGCTGGGCGAGGACGCG
GGCATGGAGGCGGCGCGGCGGAGCGCAAGGCGGAGCGGCAGGCCAAGGCGGCGGAGGTGG
GCGGCAACATGCTGCGGCTGGACCAGAACGAGATCGACCGCATGGACGACGCCTTCGCGGCC
CAGATGATGGTGCCCAACACCACCATCCGCGTGGACCGGGCCATGCTGCGGCGGCTCAAGAC
GGCCGAGGTGATGGTGCGCACCTGGCCCAACCCCGTCATCCCAAGCAGTACTTCCGCAGTCA
TGGACCAGGAGGTGCCGCTGTGCTGCAGGACCCTGCGGACACTTCTTCGAGCAGGATGAGTTC
GAGATGGCGGCGCTGGAGCGTGGACGCGGCCCTTCAGCCGCACCACCGTGGCGGCGGAGGG
CCTGGCGCCGGGCGAGGACGCCGAGGATGAGGGTGCCGGCGGCAACAAGCTGGGCGGGCCG
TTGGGCAGCGCGCGTGGGCCCATTTGGGGGCGCCAGCAAGGCGCGCATGTCCGTGCCCTTCCA
GCAGGGCCGCGCGCTGGTGTGAGCGGGGTCGCCTATCGGGCGCTTACCGGGTGCGTGGGTGG
ATTCCGATGTAGGCGGGGAATAGGAGCTGCCGGTAGTGCGGTGCAGCAGGCCTTCGTTAC
GCAGCAGAGGGGGCACGAGGAGGACGTGAACGGGTGTCTTCATGCTGCTTGTGGTCTGACTT
GGTAGGACGGGCGTTGGTGCCATCATTAGGCTGCCCTGCCGGTCCACCATAGGAGCTGCGAT
GGGCTGAAGCAAGGCCCATGCACGGTGGCCGGGCACATGATGCATGACGGGACAGAGCACG
GGAATGCTGGAACCAAGTGTACATATGCCCCGCGCAGAGACTGCGTGTCTCGAAGCGGGCACA
AATTGGGACATGTCGGCGTACAGACAAACGATGATGACAGGATGACAGTTGTTGTGCGG
CAGGGGGGCTCCCAAGCCAGTTGAGGCGCCAGGAGGTTTGGTTGAATGGGGATGCACAGTG
GCAAGTGCTAATGCGCTGGCGCTATGAGCGTCCATGGTGTGGCGGCTCAAGTACAAGACACC
TTATAGTAGTTCAATCTGCCCCGCAAAAAAAAAAAAAAAAAAAAAA

(SEQ ID NO: 17)

FIG. 13B

Human

>gi|11360072|pir|T43484 hypothetical protein DKFZp434K016.1 - human (fragment)
TLLQLKGHKDVTYCVAYAKDGKRFASGSADKSVIIWTSKLEGILKYTHNDAIQCVSYNPITHQLA
SCSSDFGLWSPEQKSVSKHKSSSKIICCSWTNDGQYLALGMFNGIISIRNKNGEEKVKIERPGGSL
PIWSICWNPSSRWESFWMNRENEDAEDVIVNRYIQEIPSTLKSAYVSSQGSEEEEEPEEEDDSPRD
DNLEERNLILAVADWGQKVSFYQLSGKQIGKDRALNFDPCISYFTKGEYILLGGSDKQVSLFTKD
GVRLGTVGEQNSWVWTCQAKPDSNYVVVGCGDGTISFYQLIFSTVHGLYKDRYAYRDSMTDVIV
QHLITEQKVRIKCKELVKKIAIYRNRLAIQLPEKILYELYSEDLSDMHYRVKEKIIKKFECNLLVVC
ANHILCQEKRLQCLSFSGVKEREWQMESLIRYIKVIGGPPGREGLLVGLKNGQILKIFVDNLFAIVL
LKQATAVRCLDMSASRKKLAVVDENDTCLVYDIDTKELLFQEPNANSVAWNTQCEDMLCFSGG
GYLNIKASTFPVHRQKLQGFVVGNGSKIFCLHVFISAVEVPQSAPMYQYLDRKLFKEAYQIACL
GVTDTDWRELAMEALEGLDFETAKKAFIRVQDLRYLELISSIEERKKRGETNNDLFLADVFSYQG
KFHEAAKLYKRSGHENLALEMYTDLCMFEYAKDFLGSGDPKETKMLITKQADWARNIKEPKAAV
EMYISAGEHVKAIEICGDHGWVMDLIDIAARKLDAEREPLLLCATYLLKLDSPGYAAETYLMGMD
LKSLVQLHVETQRWDEAFALGEKHPEFKDDIYMPYAQWLAENDRFEEAQKAFHKAGRQREAVQ
VLEQLTNNVAESRFNDAAYYYWMLSMQCLDIAQDPAQKDTMLGKFYHFQRLAELYHGYHAIH
RHTEDPFSVHRPETLFNISRFLHSLPKDTPSGISKVKILFTLAKQSKALGAYRLARHAYDKLRGLYI
PARFQSVIELGTLTIRAKPFHDSEELVPLCYRCSTNNPLNNGVNCINCRQPFIFSASSYDVLHLVE
FYLEEGITDEEAISLIDLEVLPRKDDRLQLEIANSSQILRLVETKDSIGDEDPFTAKLSFEQGGSEFV
PVVVSRLVLRSMRRDVLIKRWPPPLRWQYFRSLLPDASITMCPSCFQMFHSEDYELLVLQHGCCP
YCRRCKDDPGP (SEQ ID NO: 36)

FIG. 13C

Caenorhabditis elegans

>Ce_Daf10 Z82266 F23B2.4
MTMKKISRKLGFHGEQVCYIDLAFKPDGSELLAADNKVYLFVDVNEGGQMOTLKGHKDLVYTV
AWSHNGELFASGGADKLVLWNEKHGEGTLRYSHTDVIQCMFNPNCQILLTCALNEFGLWSTAD
KNVIKQRSVVRCCSCAWNTDGTIFAIGHGDGTITLRKGTNATEEPSIIIQRDNEPIWGIAFSSNRTFA
SRDSQGNPMGIDEIMAVIDWNKTLFSYSLDGTIFIESKNLEFEPHCISYCLNGEYLLIGGSDKILKIYT
RKGVLLGTVAQMDHWIWSVTVRPNSQTVAMGCVDTIACYNLVFSTVHCVDHARYANRKSMT
DVVFQNLEYRTSSNICCHDLVKKMSLYDTKLAVQLSDKIYKQTGGVSKNERRKQLKYTLQDTI
RKDLFSFLMVVTHGHLVVCNDEKLECYDFKGIKKRSWNMKSIVRYLRVLGGPAHRETLVLGTTD
GGVYKVFDNDYPILLDSRKTAIKCIDINANRTVLASIEDTLVCKWSDIATGETLLQEPGCYSVFN
TVNENLFAFTTNMLHVRTLAAPGHTTRGVGYVLGFVKNRFTCLVQYNLIPLEVPYTIHLYQYIER
GDFKEALRIACLGVVKNWYKLANKALDALEFDVARKAYKRVDRKMLRMVWELKKMKSNG
EPDAILRATILAYTKKFREAAKIFKENGFFENRAMELFTDMRMFDDVQEVMTTASGETKKMLMRK
RASWARDANQPKIAAEMLISSGDLDAALLIIDNDWLELAIEISHKIDRSLETMKKLSAYFIRKHE
FGLASRIFQSINDMKSIIVDMHVNAGHWTDFAFAIADRHPPKYVEDVYLPYARFLAERDRFEEAQKAF
HRAGKEQEAMHVLEQLTSNSVNNENRFADAGCGLNPLLGGMSCIH CETPFIISFVSFDILPLIEFKIE
NDISFDEAKELIESEPPLSDDDYNNPLRGLKKGIKEIILNRESLSKLEQGHVIIQTFPPPLAPKFLFNVM
SITIAQCKGCNKVFDLDDFEMA CLRKGHCPCRTSYDRNEAFFVDEEDEDNTNIPSGQFSRFS
(SEQ ID NO: 37)

FIG. 13D

IFT139

Chlamydomonas

>Cr_IFT139 partial predicted peptide sequence (lacking C-terminal end)

MADRVLALVHYAAREGYFRHVQTVCEVLKKRPGDGVLTFWRAYGLLMEGNTADAMRDLSSIQ
GNSDLELAVAAAQLLGHESAKVPDHAIDLQAKLEIEERTASDQPCHLASFYLYTKSKERARGL
VERVLRNQPDMPVPAQVLLGWIIISQQQDDEYDMLFDESELDDALSHFEQAVEHDHNDLQALLGK
AKIMELKKQLGPCLDVLTEINVRFGWFPALVEKTRMLMMLGDWEQVTETLQRVLAADQQNIM
AQAWNCMISLTREGNNKQAAKQLQDLFSSMNRQEPKNAELFFRVARPFGRACSDPTLLGITYLM
ADRAAQLRPEMAAYVVEAAAQKLMMDETTNATERFTQALQLDELNLEANAGALEAQIMAGELE
EAAGQIMFLEDMFTNAAAAGGGKRGRTGDMDDPDMDPSLGTSSDNPTLLYLKGLLAWKQ
GMPSEGLGLLERSIAALFSAAADFHGPSLELYAALNPARITAMVRLLLQSIGGEPRAPTEAPSPLISK
VTRALDLLNKQAPALQESALLHARALYLNGNLDGALRKAGEILRMNPEESSAHLICSVYVAQDK
PELAVSALDQAVSSNFAIRETPLYHVVQAKVLVANNKLDDAKRVLESAMNLPGVRTALTQQRA
RLGRKVVEPTLHERATVYLLLADVLARQSKIPDAPEAKKYIQDAIREFEGTSEEVRVTVADCELA
ARGDVEGALKKLRRIPKESPHYVKARMAMADIYLRHRKDKAAYIKCYMDLVDHTPDYDSYCML
GEAFMQIQEPEKAVRA (SEQ ID NO: 20)

FIG. 14A

>Cr_IFT139 partial Cdna sequence (lacking 3' end)

GGGTAGTCGTAACGTCTCAAGTATCGGACGCACTATTTGCAACTGCTTATTTTCGCATGGCTCC
CCCATCAATGAACTTGCTTCGTCCCTATGGCCTCCCATCGAGCGTGCAAGGTATCACCGTGTAT
ACACATGCTAAATATACTTCGTAAATTGGAGTTCACCGCGGAGGCCTGAACATTTGCCGAAC
CGCTCCTGAGGAAGCAGAACGAATAGCAGTGCATACAAATAGCCATGGCGGACAGGGTACTT
GCCCTGGTCCATTACTATGCTCGCGAGGGCTATTTTAGACATGTGCAGACGGTGTGCAACGAA
GTGCTCAAGAAGCGGCCGGGAGATGGCGTACTCACATTCTGGCGTGCCTATGGACTGCTCATG
GAGGGCAACACGGCGGACGCCATGCGTGACCTCTCCAGCATCCAGGGCAATTCTGACCTTGA
GCTGGCGGTTCGACCGCGCACTACTGGGTACGAATCCGCCAAGGTGCCCGACCACGATG
CCATCATTTGACCTCCAAGCCAAGCTGGAGATCGAGGAGCGCACCGCCAGCGACCCCTGC
CTGCACCTGGCCTCCTTCTACCTGTATACCAAGTCCAAGGAGCGCGCCCGCGGTCTGGTGGAG
CGCGTGCTGCGCAACCAGCCCGACATGGTGCCGGCGCAGGTTCTTCTGGGCTGGATCATCATC
AGCCAGCAGCAGGACGACGAGTACGACATGCTGTTTGACGAGTCCGAGCTGGACGACGCCCT
CAGCCACTTCGAGCAGGCGGTGGAGCACGACCACAACGACCTGCAGGCGCTGCTGGGCAAAG
CCAAGATCATGGAGCTGAAGAAGCAGCTGGGGCCCTGCCTGGACGTGCTGACGGAGATCAAC
GTGCGCTTCGGCTGGTTCGTGCCGGCGCTGGTGGAAAAGACGCGCATGCTCATGATGCTGGGC
GACTGGGAGCAGGTGACGGAGACGCTGCAGCGGGTGTTCGGCGGACCAACAGAACATCAT
GGCGCAGGCCTGGAAGTGCATGATCTCCCTACTCGCGAGGGCAACAACAAGCAGGCGGCCA
AGCAGCTGCAGGACCTGTTCACTCAATGAACCGCCAGGAGCCCAAGAACGCCGAGCTCTTC
TTCCGCGTCGCCCCGCCCTTCGGCCGCTGGCCTGCAGCGACCCACGCTGCTGGGCATCACC
TACCTCATGGCCGACCGCGCCGCGCAGCTCAGGCCGGAGATGGCGGCCTACGTGGTGGAGGC
AGCTGCTCAGAAGCTGATGATGGACGAGACCACCAACGCCACGGAGCGCTTCACGCAGGCGC
TACAGCTGGACGAGCTGAACCTGGAGGCCAACGCGGGCGCGCTGGAGGGCGCAGATCATGGCG
GGCGAGCTGGAGGAGGCGGCGGGGAGATCATGTTCTGGAGGACATGTTACCAACGCCGC
GGCGGCTGGCGGCGGCAAGCGCAAGGGCCGCGGCACCGGCGACATGGACGACGACCCCGAT
ATGGCCGACCCAGTCTGGGCACCTCCTCCGACAACCCACGCTGCTCTACCTCAAGGGTCTG
CTGGCCTGGAAGCAGGGCATGCCGTCCGAGGGCCTGGGTCTGCTGGAGCGCTCCATTGCCGCC
CTGTTCTCCGCCGCCGCGGACTTCCACGGCCCCAGCCTGGAGCTGTACGCGGCGCTCAACCCG
GCGCGCATCACCGCAATGGTGCGGCTGCTGCTGCAGAGCATCGGCGGTGAGCCGCGCGCTCC
CACTGAGGCGCCGTCTCCGCTCATCAGCAAGGTACCCGCGCGCTGGACCTGCTGAACAAGCA
GGCGCCGCGCTGCAGGAGAGCGCGCTGCTGCACGCGCGCGCTGTACCTGAACGGCAACC
TGGACGCGCGCTGCGCAAGGCGGGCGAGATCCTGCGCATGAACCCGAGGAGAGCTCCGCG
CACCTGCTCATCTGTTCCGTGTACGTGGCGCAGGACAAGCCGAGCTGGCCGTACGCGCGCTG
GACCAGGCCGTGAGCAGCAACTTCGCGATCCGCGAGACGCCTCTGTACCACGTGGTCCAGGCC
AAGGTGCTGGTGGCCAACAACAAGCTGGACGACGCCAAGCGCGTCTGGAGTCCGCCATGAA
CCTGCCGGGCGTGCGCACAGCGCTCACCGTGCAGCAGCGCGCGGACTAGGGCGCAAGGTGG
TCGAGCCCACGCTGCACGAGCGCGCCACCGTGTACCTGCTGCTGGCGGACGTGCTGGCGAGG
CAGTCCAAGATACCGGACGCACAGAGGCCAAGAAGTACATCCAAGACGCCATCCGCGAGTT
CGAGGGCACCAGCGAGGAGGTGCGCGTACGGTGGCGGACTGCGAGCTGGCCATTGCGCGCG
GCGACGTGGAGGGCGCGCTCAAGAAGCTGCGGCGCATCCCCAAGGAGTCTCCGCACTACGTG
AAGGCGCGCATGGCCATGGCCGACATCTACCTGCGCCACCGCAAGGACAAGGCCGCTACAT
CAAGTGCTACATGGACCTGGTGGACCACACGCCGACTACGACAGCTACTGCATGCTGGGCG
AGGCGTTCATGCAGATCCAGGAGCCGAGAAGGCAGTGCGCGCT

(SEQ ID NO: 19)

FIG. 14B

Human

>Hs_IFT139-1 ref|NT_005498.3|Hs3_5655 Homo sapiens chromosome 3
SFIQAGIIYYSQEKYFHHVQAAAVGLEKFSNDPVLKFFKAYGVLKEDREAIQELEYSLKEIRKTVSG
TALYYAGLFLWLIGRHDKAKEYIDRMLKISRGFREAYVLRGWVDLTSDKPHTAKKAIEYLEQGIQ
DTKDVGLGLMGKAMYFMMQQNYSEALEVVNQITVTSGSFLPALVLKMQFLARQDWEQTVEMG
HRRILEKDESNIDACQILTVELAREGNMTTQATNHVRNLKALETREPENPSLHLKKIIVVSRLVC
GSHQVILGLVCSFIERTFMATPSYVHVATELGYLFILKNQVKEALLWYSEAMKLDKDGMAGLTGII
LCHILEGHLEEAIEYRLEFLKEVQKSLGKSEVRAPWGYGLLQDDVLCCPPTPTFQCKVAWTFTLPLP
TKSAQADIGTETRSSLPQVLIFLQALLMSRKHKGEEETTALLKEAVELHFSSMQGIPLGSEYFEKLD
PYFLVCIAKEYLLFCPKQPRLPQIVSPLLKQVAVILNPVVKAAAPALIDPLYLMAQVRYYSGELEN
AQSIQRCLELDPASVDAHLLMCQIYLAQGNFGMCFHCLELGVSHNFQVVRDHPHYHLIKARALN
KAGDYPEAIKTLKMKVIKLPALKKEEGRKFLRPSVQPSQRASILLELVEALRLNGELHEATKVMQDT
INEFGGTPEENRITIANVDLVLSKGNVDVALNMLRNILPKQSCYMEAREKMANIYLQTLRDRRLYI
RCYELCEHLPGPHTSLLLGDALMSILEVSEPHSLAKWPPSLPSPVGEKRTQRHFPHQPEKALEV
YDEAYRQNPHDASLASRIGHAYVKAHQYTKAIEYYEAAQKINGQDFLCCDLGKLLKLKKVNKA
EKVLKQALEHDIGVQDIPSMNNDVKCLLLAKVYKSHKKEAVIETLNKVIDRWTQALALDLQSRI
LKRVPLEQPEMIPSQKQLAASICIQFAEHYLAKEYDKAVQSYKDVFSYLPDNDKVLMAJLMFRK
QKHEAANLYHQVLEKAPGDNFLVLHKLIDLLRRSGKLEDIPAFFELAKKVSSRVPLEPGFNYCRGI
YCWHIGQPNEALKFLNKARKDSTWGQSAIYHVMVQICLNPDNEVVGGEAFENLIPRSNTCSYMEKK
ELEQQGVSTAELKLLREFYPHSDSSQTQLRLLQGLCRLATREKANMEAAALGSFIQIAQAEKDSVPAL
LALAQA YVFLKQIPKARMQLKRLAKTPWVLSEAEDLEKSWLLADYICQGSKFDLAELELRRCVQ
YNKAQSCYKAYEYMGFIMEKEQSYKDAVTNYKLAWKYSHHANPAIGKATSQGARETWEGGGQ
EPHHDPRTOGLYPGCEYENQRGSQVTRVPPSLLSMSPVGFKLAFNYLKDKKFVEAIEICNDVSQQP
WWGGPGVVVGNPA (SEQ ID NO: 38)

FIG. 14C

>Hs_IFT139-2 ref|NT_005239.3|Hs2_5396 Homo sapiens chromosome 2
INYCYCQERYFHHVLLVASEGIKRYGSDPVFRFYHAYGTLMEGKTQEALREFEAIKNKQDVSLCSLL
ALIYAHKDREAILES DARVKEQRKGAGEKALYHAGLFLWHIGRHDKAKEYIDRMILKISDGSKQGH
VLKAWLDITRGKEPYTKKALKYFEEGLQDGNDTFALLGKVSQRQNYSGALETVNQIIVNFPSPFLP
AFVKKMKLQLALQDWDQTVETAQRLSNKKIFFSFCGRSQLILQKIQTLLERAFSLNPQQSEFATELG
YQMILQGRVKEALKWYKTAM TLDETSVSALVGFQICQLIEGQLQDADQQLFLNEIQSIGKSAV
LIYLHAVLAMKKNKRQEEVINLLNDVLDTHFSQLEGLPLGIQYFEKLNPDFLLEIVMEYLSFCPMQ
VSNYGFLLDGIEAAFNLLQHCLHNPSYADAHLLLAQVYLSQEKVKLCSQSLELCLSDFKVVQR
DYPLYHLIKAQSQKKMGEIADAIKTLHMAMSLPGMKRIGASTKSKDRKTEVDTSRHSIFLELIDV
HRLNGEHEATKVLQDAIHEFSGTSEEVRTIANADLALAQGDIERALSILQNVTAEQPYFIEAREK
MADIYKHKRDKMLYITCFAITYEAAALKTGQKNYLCYDLAELLLKLKWDKAQKVLQHALAH
EPGMKARELQARVLKRVQMEQPDAPVPAQKHLAAEICAIEIAKHSVAQRDYEKAIFKYREALVHCE
TDNKVDNYMTLSRLIDLLRRCGKLEDVPRFFSMAEKRSRAKLEPGFYCKGLYLWYTGEPNDA
LRHFNKARKDRDWGQNALYNMIEICLNPDNETVGGEVFENLDGDSNSTEKQESVQLAVRTAEKL
LKEKLPQTVQGHVQLRIMENYCLMATKQKSNVEQALNTFTEIAASEKEHIPALLGMATAYMILKQ
TPRARNQLKRIAKMNWNAIDAEFEKSWLLADYIQSAKYDMAEDLLKRCLRHNRSCCKAYEY
MGYIMEKEQAYTDAALNYEMAWKYSNRTNPAVG (SEQ ID NO: 39)

FIG. 14D

Caenorhabditis elegans

>gi|7511091|pir|T29012 hypothetical protein ZK328.7 - *Caenorhabditis elegans*

MKVAANELAISTIHFLPGHIEKAKASIMMKDWRGVMDCIMNADQPEGSNPYIEVLRTVHGICYAG
EVSM LKRTLQ LLLKSLDENEATNHVLYARITKLLVSISGRDEKILRHARDFLTRALKISRKPDYVAL
SMRIAFGLGGAKEVSTLSQELVALDCEDSYAVLSSVVSMLMISRVS DARAQFDILPSAHPKLLESPL
YYLIASVLAKQSKDKSFENFRQHIE NLVEMLRNQLQSFPFGLDYLSLFSSDLLYSAVEQCFDFYPLV
PIKAPDDCMKLTAKTLQMIYDVAPGLAHCTLQLARNSYLCSENTNAAEKWIEKVLDKDDSLADAHI
LRAELILDRGGKITDADDALVTGLNFNFKLRETSLYHLIKSKTFKKRNENDEAIKTLKMALQIPRKE
PSKNLFQPKESADTHKISVQLELIDTLQHMKRIQEAETMTDALAEWAGQPEQDQLVIAQAQLYL
TKGHVERALGILKKIQPGQSNFHSRIKMAEIYLEEKKDKRMFAACYRELLKVEATPGSYSLLGDA
FMKVQEPEDAINFYEQALKMQSKDVQLAEKIGEAYVMAHLYSKAVNFYESSMNIYKDKNMRLK
LANLLKLRNFEKCEKVL RAPFERDPEPVGTETIQTYIQFLLLAECEHMDNVPEAMNDFEKAKS
LHSRIQDKTLTAALKKEGARICNLQAELLYRRREFSQAVDICKQALAYHETDLKANLLLSKIFKEE
NKWTLVLQPCQTVIQVDPHNDEANSILADFYIRSEAAHASTSYTTLNTPQHWHALSRVVELF
CRNGEQNAAEKHLDRAKEVNPRCVTESGYNVCGRFEWYTG DQNEALRYYSRTKDSAAGWREK
ALYYMIDICLNP DNEIHDENSVENPETTKIHYLVSELWKKLVNSKNLPNITSIYSENFQSTDRFLLAQ
NFIRMHTTDSAIQAALDEFNRMAFNADRSQVTNVGAVFGVARGHVLLKQVQKAKTVLKMVNG
RVWNFDDSDYLEK CWLMLADIYINQNKNDQAVTFDLVFKYNCNCLKAFELYGYMREKEQKYV
EAYKMYEKAFMATKERNPGFGYKLAFTY LKAKRLFACIETCQKVLDLNPQYPKIKKEIMDKAKA
LIRT (SEQ ID NO: 40)

FIG. 14E

Che-2

Chlamydomonas

>Cr_Che-2 predicted peptide sequence

MRLKVKQSSANVHSELTAAVGWNVWNEFTCSDDQTIHKWNMLGEPEQKVSTLDAYFTDMHW
YPVSSKKTQAGGTDVFAVACTDGSVKILSRTGRVEKSIEGHKGACISLRWSYDGTALATAGEDGS
VKIWSRNGMLRSTLAQADSPVYSIVWAYDCDQLCYCTGSNVVIKSLSSNAKQNAWKAHDGVVL
KVDWSPINHLITGGEDCKYKVVWDSFGRLLFQSGLFDYPVTSVAWAPSGELFAVGGFNTLQLCDR
MGWAYSKIHLNDTGSIMTSLWTADSTQLAGGGGSGGVVFGQVVDLALEDGKMQVTVVDDMRIV
VNDILNENADELPEFRDRVIVSLGYGYLIVATATQCHVYNTTNLGTPHIFDLKDTVTLLLQAERH
FLLDNSAGIQIYTYEGRQICNPRFQGLRTELLNAQMITLSNDTIAVLDQQASGTTVRFFDTAQGRP
VGEPWQHTLEVKEIALSQAGTINDRQLIVIDNRDLYLLPVMKRHVAKLAAMCDSARWHDSTAM
LSAMVDQRLCVWYYPSEVYVDKDLLAKTRYTKSDSDFGKSAQIQLFAGNRCLVRRSDGVLVSAA
TSPYPAVLYDMIRKQQWDKATRLCRFIKDPTMWATLAAMAMAAKELNTAEVAFAAIDEVDKTH
FVRKVKQIPTEEGRNAELAVYRRKPEEGESILLQAGLVFRAIKLNIKLFNWERALXLATQHKQHQD
TVLWYRQQFLKNAKLAESITRFMQMNESVVVDQAAVKKKIEEERIKESQRPGAKRYV

(SEQ ID NO: 22)

FIG. 15A

>Cr_Che-2 cDNA sequence

ATGCGTCTCAAGGTCAAGCAGTCCAGCGCGAATGTGCACAGCGAATTAACAGCAGCTGTGGG
CTGGAATGTCTGGAATGAACTGTTCACTTGTAGCGACGACCAGACTATTCACAAATGGAACAT
GCTGGGGGAGCCAGAGCAGAAGGTCAAGCAAGCAGGCGGGACGGACGTATTCGCGGTGGCGTGACA
ACCCCGTGAGCTCGAAGAAGACGCAAGCAGGCGGGACGGACGTATTCGCGGTGGCGTGACA
GACGGCTCTGTAAAAATCCTCAGCCGCACGGGCCGCGTGGAGAAGTCCATTGAGGGGCACAA
GGGCGCGTGCATCTCGCTGCGCTGGAGCTATGACGGGACGGCACTGGCGACGGCGGGCGAGG
ACGGGTCGGTAAAGATCTGGTTCGCGCAACGGCATGCTGCGCTCCACGCTAGCGCAGGCGGAC
AGCCCCGTGTACTCGATTGTGTGGGCCTACGACTGCGACCAGCTGTGCTACTGCACCGGCTCC
AACGTGGTCATCAAGTCGCTGTCTCCAACGCCAAGCAGAACGCGTGGAAGGCGCACGACGG
CGTGGTGCTCAAGGTGGACTGGAGCCCCATCAACCACCTCATCATCACAGGCGGCGAGGACT
GCAAGTACAAGGTGTGGGACAGCTTTGGGCGGCTGCTGTTCCAGAGCGGGCTGTTGACTACC
CGGTCACGTTCGGTGGCGTGGGCGCCCAGCGGCGAGCTGTTGCGGTGGGCGGCTTCAACACG
CTGCAGCTGTGTGACCGCATGGGCTGGGCCTACTCCAAGATCCACCTCAACGACACGGGCAGC
ATCATGACTCTGAGCTGGACGGCGGACAGCACGACGCTGGCGGGCGGCGGCGGCAGCGGCGG
CGTGGTGTTTCGGCCAGGTGGTGGACCTGGCGCTGGAGGACGGCAAGATGCAGGTGACGGTGG
TGGACGACATGCGCATTGTGGTGAACGACATCTTGAACGAGAACGCGGACGAGCTGCCCCGAG
TTCCGTGACCGCGTCATCAAGGTGTGCTAGGGTACGGCTACCTGATCGTGGCCACCGCGACG
CAGTGCCACGTGTACAACACCACCAACCTGGGCACGCCGCACATCTTTGACCTCAAAGACACG
GTCACCCTGCTGCTGCAGGCTGAGCGGCACTTCTGCTGCTGGACAACCTCGGCGGGCATCCAG
ATCTACACCTACGAGGGCCGCCAGATCTGCAACCCGCGCTTCCAGGGCCTGCGCACCGAGCTG
CTGAACGCGCAGATGATCACGCTGTCCAACGACACGATAGCGGTGCTGGACCAGCAGGCCAG
CGGCACCACCGTGCGCTTCTTCGACACGGCGCAGGGCCGGCCAGTGGGCGAGCCGTGGCAGC
ACACGTTGGAGGTGAAGGAGATCGCGCTGAGCCAGGCCGGCACCATCAACGACCGCCAGCTC
ATCGTCATCGACCGCAACCGCGACCTGTACCTGCTGCCCCGTCATGAAGCGCCACGTGGCCAAG
CTGGCGGCCATGTGCGACTCGGCGCGCTGGCACGACAGCACCGCCATGCTGTCCGCCATGGTG
GACCAGCGCCTGTGTGTGTGGTACTACCCAGCGAGGTGTACGTGGACAAGGACCTGCTGGCC
AAGACGCGCTACACCAAGTCCGACTCGGACTTTGGCAAGTCGGCCCAGATCCAGCTCTTCGCC
GGCAACCGCTGCCTGGTGCGCCGCTCCGACGGCGTGCTGGTCTCCGCCGCCACCTCGCCCTAC
CCTGCCGTACTGTACGACATGATCCGCAAGCAGCAGTGGGACAAGGCCACGCGGCTGTGTGCG
CTTCATCAAGGACCCCAACCATGTGGGCCACGCTGGCGGCGATGGCCATGGCGGCTAAGGAGC
TGAACACGGCGGAGGTGGCGTTTCGCGGCGATTGACGAGGTGGACAAAACGCACCTTTGTGCGC
AAGGTGAAGCAGATCCCCACGGAGGAGGGCCGCAACGCCGAGCTGGCGGTGTACCGGCCGA
AGCCCGAGGAGGGCGAGTCCATACTGCTGCAGGCCGGCCTGGTCTTCCGCGCCATCAAGCTG
AACATCAAGCTGTTCAACTGGGAGCGCGCGCTGSACCTGGCCACGCAGCACAAGCAGCACCA
GGACACGGTGCTGTGGTACCGCCAGCAGTTCTCAAGAACGCCAAGCTCGCCGAGTCCATCAC
GCGCTTCATGCAGATGAACGAGTCGGTGGTTGTGGACCAGGCGGCGGTGAAGAAGAAGATCG
AGGAGGAGCGCATCAAGGAGTCGACGCGGCCAGGCGCCAAGCGCTACGTGTAA

(SEQ ID NO: 21)

FIG. 15B

Human

>Hs_Che-2 gi|7243129|dbj|BAA92612.1| KIAA1374 protein [Homo sapiens]
IELVSCVGWTTAEELYSCSDDHQIVKWNLLTSETTQIVKLPDDIYPIDFWFPKSLGVKKQTQAESF
VLTSSDGKFHLISKLGKRVESVEAHCGAVLAGRWNYEGTALVTVGEDGQIKIWSKTGMLRSTLA
QQGTPVYSVAWGPDSEKVLVYTAGKQLIKPLQPNKVLQWKAHDGIIKVDWNSVNDLILSAGED
CKYKVVWDSYGRPLYNSQPHEHPITSAWAPDGELFAVGSFHTLRLCDKTGWSYALEKPNTGSIFN
IAWSIDGTQIAGACGNHGVFAHVVEQHWKWNFQVTLTKRRAMQVRNVLNDVLDLLEFRDRV
IKASLNYAHLVVSTSLQCYVFSTKNWNTPIIFDLKEGTVSLILQAERHFLVDGSSIIYLYSYEGRFIS
SPKFPGMRTDILNAQTVSLSNDTIAIRDKADEKIIFLFEASTGKPLGDGKFLSHKNEILEIALDQKGL
TNDRKIAFIDKNRDLCTSVKRFQKEEQIKLGTMVHTLAWNDTCNILCGLQDTRFIVWYYPNTVY
VDRDILPKTLYERDASEFSKNPHIVSFVGNQVTIRRADGSLVHISITPYPAIHEVYSSSKWEDAVRL
CRFVKEQTMWACLAAMAVANRDMTTAEIAYAAIGEIDKVQYINSIKNLPSKESKMAHILLFSGNI
QEAEIVLLQAGLVYQAIQININLYNWERALELAVKYKTHVDTVLAYRQKFLETFGKQETNKRYLH
YA EGLQIDWEKIKAKIEMEITKEREQSSSSQSSKSI GLKP (SEQ ID NO: 41)

FIG. 15C

Caenorhabditis elegans

>Ce_Che-2 gi|4468141|emb|CAB38019.1| CHE-2 protein [Caenorhabditis elegans]
MKLKLSASRKTRHTEMVCGVGWIGTEAILSADDHVFLLTNTATNESQQILNMPETFFPTSLHIFP
RSQTKGGQNDVFAVSTSDGKINILSRNGKVENMVDAHNGAALCARWNSDGTGLSSGEDGFVK
MWSRSGMLRSVLAQFATAVYCVAWDSTSSNVLYCNADHCYIKSLKMQVAPIKWKAHDGII LCCD
WNPTSDLIVTGGEDLKFKVWDGFGQILFNSSVHDYPITSISWNTDGT LFAVGSHNLRLCDKSGWS
HSLEKMNAGSVMALSWSPDGTQLAVGTAAGLVFHAHIIDKRLTYEEFEIVQTQKT VIEVRDVSSE
VSRETLETKERISKIAILYKYLIVVTSSHIYIYSSKNWNTPTMIEYNERTVNII VQCEKIFLVSDGMTIT
IFTYEGRKLINLNPPGQVMALLDERKIDLANDTLVVRDRADNKVLHFFDPTTGKAQGDGNLKHEH
DIVELTVNQCGPLNDRNVAFRDQIGAVHIAMVKTFGVSQRMVKIGSLVEQLVFNDVTNMLCGISE
GKIAVWPLPNVAFHDRNLLQKSLIQKNIGSVGKFPQLANFAGNTIVIRKSDGCLLP TGILPFYGT LIT
MASQSKWDQAIRLCRSIGNDTMWATFAGLAVLHKNMIVMEIAYAALEDDEKVS LINEIKDKTDK
ETRQAMQVVLTGKLADADVLLERSGLSFRSLMLNIQMFKWKRALELGLKNKQWLEIVMGYREK
YLKNCGQKETDPLFLKHMSEVEIDWVHIRELIAAEKAKGNN (SEQ ID NO: 42)

FIG. 15D